

4.6.3 Public Water Supply

No primary water sources that contribute recharge to a public water supply system would be crossed by the proposed highway. However, the highway would cross Twelvemile Bayou, which is considered an alternate water supply source for the Shreveport Water System. All alignments would cross the bayou about 16 kilometers (10 miles) upstream from the intake for the pumping station.

Short term increases in sedimentation and turbidity in the vicinity of the proposed bridge crossing at Twelvemile Bayou could occur as a result of highway construction. These secondary impacts can be minimized with the proper implementation of sedimentation and erosion control techniques.

The No-Action alternative would not impact public water supplies.

4.7 FLOODPLAINS

A floodplain evaluation was conducted in accordance with EO 11988, "Floodplain Management", 23 CFR 650, Subpart A, "Location and Hydraulic Design of Encroachments on Floodplains", and USDOT 5650.2, "Floodplain Management and Protection". The location of 100 year floodplains for creeks and bayous throughout the Preferred Corridor, as identified on Flood Hazard Boundary Maps and Flood Rate Insurance Maps, are shown on Exhibit 4-1.

4.7.1 Floodplain Impacts

Table 4-9 presents floodplain impacts by alignment. Line 3 would have the greatest impact on floodplains, while Line 4 would have the least. Line 1, Line 2, and Line 3 would cross the only floodway in the Preferred Corridor located near McCain Creek north of MLK Drive.

**Table 4-9
FLOODPLAIN IMPACTS**

Alignment	ha	ac
No-Action	0	0
Line 1	226.3	559.1
Line 2	220.6	545.2
Line 3	227.0	561.0
Line 4	191.6	473.7
Preferred	218.3	539.7
Selected	217.5	537.7

Source: Michael Baker Jr., Inc.

Other minor floodplain impacts occur near McCain Creek, Swift Bayou near LA 530, and Hartman and Nances Branch west of Ida. In addition, Line 2 and the Selected Alignment would cross small floodplains east of Hosston associated with Kelley Bayou.

The No-Action alternative would not impact floodplains or floodways.

Detailed hydraulic studies will be performed during the final design phase of the project to determine any changes in flood elevations due to construction. DOTD and FHWA will review these studies to confirm that adequate measures have been taken to insure that floodplain encroachment

does not increase the risk of flooding to adjacent properties.

4.7.2 Secondary Floodplain Impacts

Interchange locations within floodplain areas were analyzed for potential secondary development that could promote incompatible floodplain development. Floodplain areas involved were associated with Twelvemile Bayou at I-220, McCain Creek at MLK Drive and LA 1, and Swift Bayou Canal at LA 530 and are shown in Exhibit 4-1.

All alignments have an interchange proposed at I-220 that would encroach upon the Twelvemile Bayou floodplain. No secondary development would occur for Line 1, Line 2, Line 3, or the Selected Alignment at I-220. This interchange functions as a system to system connection and would not accommodate adjacent secondary development. Line 4 would impact this floodplain at the North-South Expressway/I-220/U.S.71 interchange. Secondary floodplain impacts due to interchange development could occur at this location.

All alignments have an interchange proposed at MLK Drive that would encroach upon the McCain Creek floodplain. Interchanges associated with Line 1, Line 2, Line 3, and the Selected Alignment would have sufficient land outside of the floodplain for secondary development westward along MLK Drive. The location of McCain Creek and the proposed Paul Lynch Park property would restrict

development to the east at this location. Secondary impacts to floodplains due to interchange development could occur at this location for Line 4.

All alignments have an interchange proposed at LA 1 that would encroach upon the McCain Creek floodplain. Land suitable for development would exist east of the proposed interchange. Existing residential land could be converted to commercial purposes avoiding incompatible floodplain development.

All alignments have an interchange proposed at LA 530 that would encroach upon the Swift Bayou Canal floodplain. At this location, sufficient undeveloped land exists outside of the Swift Bayou Canal floodplain that could support secondary development. However, as discussed in Section 4.1.1, little development would be expected at this interchange location.

4.8 WETLANDS

All wetlands identified within the Preferred Corridor were evaluated in accordance with Executive Order 11990 entitled "Protection of Wetlands". Wetland types and boundaries were placed into the GIS to determine total wetland size and encroachment for each alignment. Impacts are based on the wetland area within the alignment construction limits. Due to the relative number and spatial distribution patterns of wetland communities, as well as a thorough consideration of other environmental

concerns including existing topography, residential structures and communities, a practicable alignment that avoids all wetlands is not possible within the Preferred Corridor. However, throughout the development of all alignments, wetland impacts were minimized to the greatest extent possible.

Continuing coordination between the Corps of Engineers and DOTD will assure that all regulations are satisfied. The Section 404 permit application has been prepared and submitted to the Corps of Engineers.

4.8.1 Wetland Impacts

When accessible, all impacted wetlands were delineated in accordance with the Corps of Engineers Wetlands Delineation Manual (COE Manual, January, 1987). When property access was denied, wetland boundaries were photointerpreted using color infrared photography. Wetland delineation methodology and boundary determinations were reviewed and approved by the COE during a March 19, 1998 field review.

Detailed information on each wetland is located in the *Wetland Technical Report*.

Wetland impacts are presented in Table 4-10 and shown on Exhibit 4-1. All alignments would impact wetland resources. Line 4 would have the greatest wetland impacts, while the Selected Alignment would have the least. Further, the Selected Alignment would impact the least amount of forested wetlands. The majority of wetland impacts would be to bottomland hardwood systems adjacent to area streams and bayous. Little impact would occur to scrub/shrub or herbaceous wetlands. Areas identified as farmed wetlands are currently in use as pasture for cattle grazing and hay production.

The largest wetland impact common to all alignments occurs just north of MLK Drive adjacent to McCain Creek. This forested wetland is predominantly composed of sugarberry, water oak, sweet gum, and green ash.

**Table 4-10
WETLAND IMPACTS**

Alignment	Herbaceous			Scrub/Shrub			Forested			Farmed			Total		
	#	ha	ac	#	ha	ac	#	ha	ac	#	ha	ac	#	ha	ac
No-Action	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Line 1	0	0	0	1	0.2	0.6	12	38.8	95.9	2	17.4	43.0	15	56.4	139.5
Line 2	1	1.4	3.5	0	0	0	10	37.2	92.0	2	21.5	53.0	13	60.1	148.5
Line 3	0	0	0	1	0.2	0.6	11	39.9	98.7	2	18.0	44.5	14	58.2	143.8
Line 4	1	1.4	3.5	0	0	0	12	44.5	109.8	2	16.5	40.7	15	62.4	154.0
Preferred	1	1.4	3.5	0	0	0	10	30.8	76.0	2	23.3	57.5	13	55.5	137.0
Selected	1	1.4	3.5	0	0	0	10	30.8	76.0	2	22.3	55.1	13	54.5	134.6

Source: Michael Baker Jr., Inc.

Clay soils present at this wetland reduce infiltration and result in ponding of precipitation and runoff from seasonal flooding events. Avoidance of this wetland is not practicable at this location. The Selected Alignment would impact the least amount of this forested wetland. Modifications were made to the original alignments based on agency field review comments that moved the Selected Alignment north and east to reduce wetland impacts. Further eastward movement is restricted by the Paul Lynch Park property and further northward movement is restricted due to engineering design constraints associated with the curve necessary to cross Pine Hill Road and LA 1 at the desired locations. Westward movement would result in greater wetland impacts.

Other construction related impacts could include erosion and sediment deposition, and altering water regimes and water quality. The majority of these impacts are temporary in nature and their severity can be mitigated during construction through implementation of the following:

- ☐ Wetlands outside the construction limits will not be used for construction support activities (borrow sites, waste sites, storage, parking access, etc.) unless the contractor obtains 404 permits from the Corps of Engineers
- ☐ Clearing of wetland vegetation will be limited to the minimum required for job completion

- ☐ Coordination with the contractor to ensure that all appropriate measures will be taken to protect the water quality of adjacent wetlands through the use of straw bales, silt fencing, and seeding and mulching.

Wetland impacts could also result from the relocation of utilities (electric, gas, water and sewage transmission lines) and oil and gas wells. These issues were considered during the alignment development process. The proposed highway has been developed on new location and as such, involvement with major utilities has been minimized. The crossing of the Caddo-Pine Island oil field and the associated petroleum transmission lines would occur primarily in upland areas where relocation would not involve additional wetland impacts.

The Corps of Engineers Descriptive Approach methodology (COE 1995) was used to determine functions and values of impacted wetlands. This process is described in detail in the *Wetlands Technical Report*. Principle functions and values such as floodflow alteration, wildlife habitat, and recreational value were identified and assessed for each impacted wetland. In general, most impacted forested wetlands functioned in floodflow alteration, nutrient removal/retention, and provided habitat for area wildlife species.

The No-Action alternative would not impact area wetlands.

4.8.2 Wetlands Finding

Based on the above analysis, it is determined that there is no practicable alternative to the proposed construction of the Selected Alignment in wetlands. The location of the Selected Alignment includes all practicable measures to minimize harm to wetlands as specified in Executive Order 11990.

4.8.3 Secondary Wetland Impacts

All alignments have an interchange proposed at MLK Drive where secondary development could impact wetlands. Development and subsequent impacts of any wetlands at this location would be under the jurisdiction of the COE and other permitting agencies and as such, would require an Alternatives Analysis documenting avoidance and minimization efforts and a mitigation plan if appropriate.

A review of the remaining Selected Alignment interchange locations found sufficient non-wetland land to accommodate potential secondary development. The extent of potential secondary development would vary depending on surrounding land use and distance to nearby communities (see Section 4.1.1). As discussed above, development and subsequent impacts of any wetlands at any location would require coordination with the COE and other state and federal agencies prior to construction.

4.8.4 Wetland Mitigation Requirements

Wetland area lost due to construction of the proposed highway would be replaced through mitigation activities. Wetland mitigation requirements were discussed with the COE on April 14, 1999. Coordination with the COE is on-going. Forested and herbaceous wetland impacts would be replaced at a ratio of at least 1:1. Final mitigation ratios and requirements will be determined in conjunction with the Section 404 Permit process and will be finalized after the issuance of the Record of Decision for this project.

4.9 NATURAL COMMUNITIES

Impacts to terrestrial and aquatic communities would primarily result from the conversion of existing land to highway right-of-way (Table 4-11). Land conversion impacts for each alignment were assessed using the GIS to determine the extent of impact to five broad natural communities. These communities are described in Section 3. Impacts are based on the area within the alignment construction limits. Wetland community impacts are described in detail in Section 4.8.

The pasture/old field and pine/oak forest would be the community types most affected by all alignments. This is consistent with the dominant vegetation found throughout the study area.

Related impacts to the timber or forestry industry would be minimal. Based on information collected at the Caddo Parish Assessors Office, 105,503

**Table 4-11
NATURAL COMMUNITY IMPACTS**

Alignment	Community Types									
	Bottomland Hardwoods		Pasture/Old Field		Cropland		Pine/Oak Forest		Isolated Ponds	
	ha	ac	ha	ac	ha	ac	ha	ac	ha	ac
No-Action	0	0	0	0	0	0	0	0	0	0
Line 1	62.8	155.2	185.6	458.6	55.0	135.9	190.0	469.5	1.7	4.2
Line 2	67.0	165.6	187.5	463.4	79.2	195.7	167.0	412.7	0	0
Line 3	60.0	148.3	177.2	437.8	62.6	154.7	172.0	425.0	0.2	0.5
Line 4	28.0	69.2	203.5	502.9	80.4	198.7	169.2	418.1	2.5	6.2
Preferred	64.0	158.1	189.5	468.3	80.4	198.7	171.4	423.5	2.5	6.2
Selected	64.0	158.1	189.5	468.3	80.4	198.7	171.4	423.5	2.5	6.2

Source: Michael Baker Jr., Inc.

hectares (260,695 acres) of land were used in Caddo Parish to produce wood fiber in 1998. Contact with area landowners identified property in timber production that would be affected by the highway alignments.

Line 2, Line 4, and the Selected Alignment would impact approximately 19 hectares (47 acres) of timberland, less than 1% of the 1998 Caddo Parish total. Line 4 and the Selected Alignment would impact the greatest amount of cropland. These alignments run east of Hosston minimizing residential, wetland, and floodplain impacts in this area, but impacting additional cropland. This is the publicly preferred alignment around Hosston and was identified by the U.S. Fish and Wildlife Service as their preferred route.

Aquatic community impacts would be limited to the conversion and filling of several isolated ponds, primarily used for cattle production, and increased

levels of sedimentation at stream crossing areas during construction. As described previously, increased sedimentation could adversely impact both aquatic invertebrates and fishes and cause temporary habitat degradation for a number of species.

No terrestrial or aquatic species populations would be eliminated due to construction of any of the alignments. Some individual species mortality would occur to less mobile species, such as reptiles and amphibians, during initial construction activities. Construction of the alignments would convert existing habitat communities to early successional grassy or shrubby vegetation commonly associated with highway right-of-way. Potential wildlife impacts would likely follow those observed on other similar existing highways. Researchers have found that construction and operation of highways does not adversely affect the